Annular Casing Pressure Management for Offshore Wells Industry Feedback Workshop

Hybrid Wells Breakout Session

August 18, 2004

THE HYBRID TEAM

Highlights

- Use of Frac. gradient in MAWOP calculation – Include N+1 Frac in N MAWOP Calculation (Norway) – case for undetected flow in N+1 annulus.
- Include de-rating of all tubulars and system components prior to MAWOP calculation (wear, corrosion, tension, environmental loads…) otherwise not comfortable with proposed %'s.
- For Hybrid Wells with mudline packers, calculate MAWOP for Upper A Annulus in Riser System and a separate MAWOP for below mudline considerations.
- Advisable to maintain a measurable pressure on annulus for monitoring purposes. Will be able to monitor for loss of pressure.

Highlights

- MAWOP should reflect the limiting condition at any point along the column. (May not be at surface)
- Consider situations for loss of backside fluid/pressure. May not be at the surface.
- Emphasize the philosophy of cascading casing failures. A change on the A Annulus may effect other annulli, etc – Example APB.
- Split first decision point in decision tree into two separate – ie. 200 psi change and < MAWOP.
- Verify that current annular pressures are within provisions of initial design load cases for N annulus (measured) and outer annuli (assumed or modeled)

Documentation

- Include Genesis-type well schematic
- RP is currently written for office staff – should we address field personnel?
- RP is structured around completeness for each well type, which causes some repetition. Confirmed correct by group.
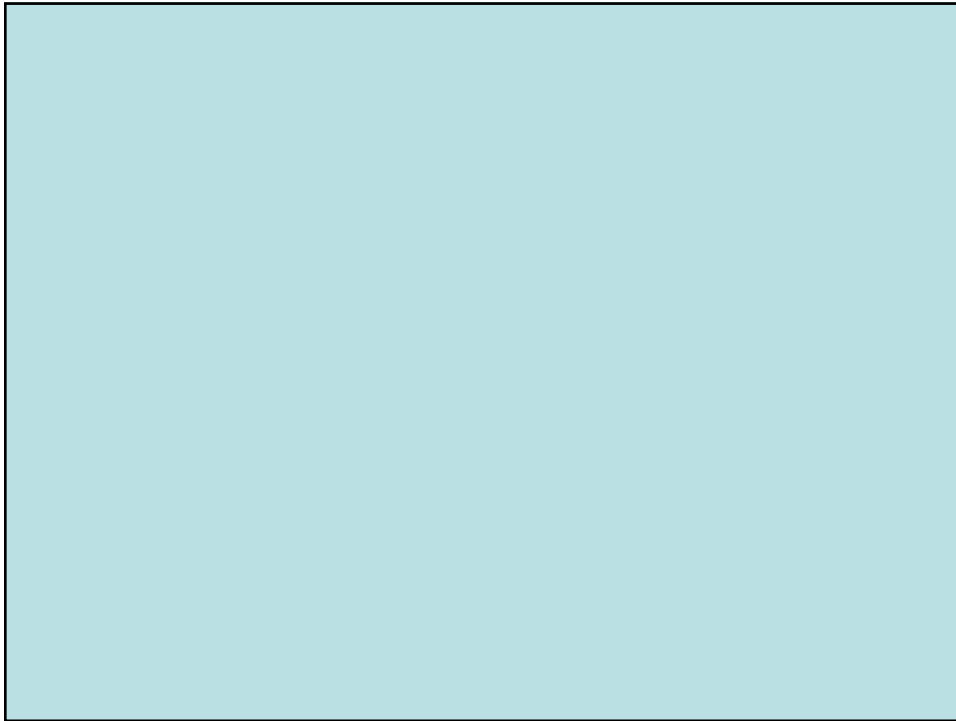
Goals

- To obtain feedback on the draft RP from industry representatives on direction, format and content
- Non-prescriptive approach should also include basis of historical performance
- Ensure the RP addresses a wide range of design configurations (i.e. balance between general and specific)
- What are the implications for hardware design?
- Obtain feedback from outside the USA
- Understand MAWOP
- Learn more about Risk Analysis, including acceptance criteria and their basis
- Does RP state/specify reliability of well components?
- Does RP allow an operator to use their own numbers for component reliability?

SCP Management / Decision Tree

- Clarify where MAWOP is to be calculated (only at surface, seafloor, limiting)
- Modify approach to treat upper and lower A annulus sections separately
- Re-consider 67% in MAWOP – may be too high for riser section. Consider use of de-rated pressure
- Evaluate down-rating of all tubulars for environmental loads
- Emphasize the philosophy of cascading failures

- Split first decision point in decision tree into two separate

- Should decision tree incorporate checks for unmonitored annuli?
- Should MAWOP also check leak paths via next N+1 annuli?

SCP Management / Decision Tree

- Verify that current annular pressures are within provisions of initial design load cases for N annulus (measured) and outer annuli (assumed or modeled)
- Generalize diagnostics to include pressure increases (i.e. not just bleed-down)
- Should include a diagnostic for A – B annulus communication?
- Consider situations for loss of backside fluid/pressure
- Address backup fluid pressure gradients in MAWOP calculations
- Highlight the need for maintaining a measurable pressure on annulus
- Cannot utilize frac. gradient on N+1 annulus (Norway)

Example problems

- Work through a single riser, upper / lower A annulus example.